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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,347	12/19/2001	Michiru Hogyoku	15.52/6357	3448

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EXAMINER

SOWARD, IDA M

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/025,347

Applicant(s)

HOGYOKU, MICHIRU

Examiner

Ida M Soward

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

This Office Action is in response to the Applicant's amendment filed March 10, 2003.

### *Specification*

The objection to the title has been withdrawn due to the amendment filed.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabral, Jr. et al. (US 2002/0022366 A1) in view of Hu et al. (5,780,899) and Hirano (US 001/0029067 A1).

Cabral, Jr. et al. teach a semiconductor device comprising: a dielectric film (BURIED OXIDE) formed on a semiconductor substrate; a SOI film comprising single crystal Si formed on the dielectric layer film; a gate dielectric film formed on the SOI film; a gate electrode formed on the gate dielectric film; a diffusion layer for source/drain regions formed in source/drain regions of the SOI film; a thickness of the SOI film is 0.003  $\mu\text{m}$  or greater and 0.1  $\mu\text{m}$  or smaller which is in the ranges of 0.084  $\mu\text{m}$  or greater

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and 0.094  $\mu\text{m}$  or smaller; 0.089  $\mu\text{m}$  or greater and 0.099  $\mu\text{m}$  or smaller; 0.093  $\mu\text{m}$  or greater and 0.103  $\mu\text{m}$  or smaller; 0.096  $\mu\text{m}$  or greater and 0.106  $\mu\text{m}$  or smaller; 0.100  $\mu\text{m}$  or greater and 0.110  $\mu\text{m}$  or smaller; 0.068  $\mu\text{m}$  or greater and 0.078  $\mu\text{m}$  or smaller; 0.074  $\mu\text{m}$  or greater and 0.084  $\mu\text{m}$  or smaller; 0.078  $\mu\text{m}$  or greater and 0.088  $\mu\text{m}$  or smaller; 0.083  $\mu\text{m}$  or greater and 0.093  $\mu\text{m}$  or smaller; 0.087  $\mu\text{m}$  or greater and 0.097  $\mu\text{m}$  or smaller; 0.057  $\mu\text{m}$  or greater and 0.067  $\mu\text{m}$  or smaller; 0.063  $\mu\text{m}$  or greater and 0.073  $\mu\text{m}$  or smaller; 0.072  $\mu\text{m}$  or greater and 0.082  $\mu\text{m}$  or smaller; 0.076  $\mu\text{m}$  or greater and 0.086  $\mu\text{m}$  or smaller (Figure 4, pages 2 and 4, paragraphs [0024], [0060-0061] and [0066], respectively). However Cabral, Jr. et al. fail to teach a power supply voltage and an SOI impurity concentration. Hu et al. teach a power supply voltage of 0.6V (col. 6, claim 1). Hirano teaches an impurity concentration of an SOI film in the order of magnitude of  $10^{17} / \text{cm}^3$  (Figure 15, page 4, paragraph [0063]). Hirano further teaches CMOS technology (page 3, paragraph [0045]). In regard to the power supply voltage, Hu et al. discloses the claimed power supply voltage of 0.6V except for the power supply voltages of 0.8 and 1.0V. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the power supply voltage of Hu et al., since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In regard to the SOI film impurity concentration, Hirano discloses the SOI film impurity concentration of  $10^{17} / \text{cm}^3$  except for the SOI film impurity concentration of claims 3-5, 8-10 and 13-15 which has an order of magnitude of  $10^{18} / \text{cm}^3$ . It would have been obvious to one having ordinary skill in the art at the time the

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invention was made to modify the SOI film impurity concentration of Hirano, since it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP § 2144.05. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cabral, Jr. et al. with the power supply voltage of Hu et al. and the SOI impurity concentration of Hirano to provide a semiconductor device capable of suppressing delay in operation.

### ***Response to Arguments***

Applicant's arguments filed 03-10-03 have been fully considered but they are not persuasive.

Since Cabral, Jr. et al., Hu et al. and Hirano from the same field of endeavor (SOI semiconductor devices), the purpose disclosed by Hirano (to provide a semiconductor device capable of suppressing delay in operation on page 2, paragraph [0026]), would have been recognized in the pertinent art of Cabral, Jr. et al. and Hu et al.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M Soward whose telephone number is 703-305-3308. The examiner can normally be reached on Monday - Thursday, 6:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ims  
May 22, 2003

  
**AMIR ZARABIAN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**